RANCHO SANTA ANA BOTANIC GARDEN
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QUERCUS AGRIFOLIA
COAST LIVE OAK

RANCHO SANTA ANA BOTANIC GARDEN
of the
NATIVE PLANTS OF CALIFORNIA
Santa Ana Cañon, Orange County, California
Established 1927 in Memory of
JOHN W. BIXBY

QUERCUS AGRIFOLIA
COAST LIVE OAK

Fagaceae Beech Family

Evergreen tree 30-60 ft. high (occasionally 75-80 ft.), usually with a broad, rounded crown; trunk short, 3-8 ft. in diam., soon divided into numerous massive branches; bark deep gray, smooth, or on old trunks broken into small plates. Leaves alternate, thickened, coriaceous, oval to oblong, 1½-4 in. long, convex or cupped, margins with numerous small spines (sometimes nearly spineless), dark green above, lighter beneath and lightly pubescent with stellate hairs. Flowers without petals, monoecious (staminate and pistillate separate on same tree), borne in early spring on new shoots. Staminate flowers yellow or reddish tinged, about ⅛ in. long, loosely arranged on drooping, deciduous catkins 1-3 in. long; calyx 5-7-parted; stamens 5-10 (usually 6-7); anthers 2-celled. Pistillate flowers reddish, 1-3 in an axil, each in a many-bracted involucre enclosing the 6-parted calyx and 3-celled ovary; styles 3. The ovary develops into a single-seeded fruit known as the acorn (rarely 2 ovules develop), surrounded by the thin, imbricated involucral scales which form the cup. Acorns mature the first season (Sept.-Nov.), and are usually shed without the cups. Acorns 1-2 in. long, slender, pointed, somewhat longitudinally striped, rich brown, the shell densely tomentose within. In germination the fleshy cotyledons remain within the acorn; the hypocotyl emerges from the pointed end, elongates rapidly and forms a long taproot before the stem and leaves appear above ground.

The genus *Quercus* (Latin name for oak) is widely distributed in the northern hemisphere and contains 200-300 species. In California about 20 kinds are known and constitute a conspicuous and sizable proportion of the woody vegetation.

Quercus agrifolia (from Greek for field, hence harsh, and Latin for leaf) was described in 1801 by Don Luis Neé, Spanish botanist, who collected it at Monterey. It ranges from southern Mendocino Co. (rare) south through San Diego Co. to the San Pedro Martir Mts., Baja California. In the immediate vicinity of the coast it grows almost everywhere, but toward the interior it is largely confined to sheltered canyons and north sloping hillsides. A race of this oak with leaves densely tomentose beneath grows from the interior of San Diego Co. to Riverside Co. and was published as *Q. oxyadenia* by Torrey in 1853, but the name was not generally applied until J. T. Howell (1931) revived it as *Q. agrifolia oxyadenia*. A scrub form in the chaparral was published as *Q. agrifolia frutescens* by Jepson in 1923. In 1855 Kellogg published *Q. acroglandis*, but his tree is typical *Q. agrifolia*. A related species is *Q. Wislizenii*, distinguished by uncupped leaves and acorns requiring two years to mature.

The Coast Live Oak is also known as California Live Oak, Encina

and Live Oak. The acorns were an important source of food for the Indians. Many trees were formerly cut for fuel, but in most localities they are now too valuable as landscape features to be destroyed. This is especially true in southern California where a few of these trees on a homesite make the land several times as valuable as adjacent treeless areas. At one time the bark was used in tanning leather, and fishermen still use it occasionally to preserve their nets. These trees also constitute the most valuable source of leafmold in southern and central California.

Propagation of *Quercus agrifolia* is from acorns, which should be planted as soon as ripe for best results. If possible, a few acorns should be placed in well prepared holes where each tree is wanted. In this way the taproot is not broken by transplanting and the young seedling will make a growth of 1-4 ft. the first season, after which the smaller ones should be removed. Acorns may also be planted in containers or in nursery rows. Trees 10-15 ft. high are easily moved bare root in the spring, provided that about three-fourths of the tops are removed. Larger trees are moved by boxing, a process for experts, and which requires two years. Such trees cost up to one thousand dollars each, delivered and guaranteed to live.

Quercus agrifolia is a fine tree for naturalistic plantings in canyons and on slopes, for shade in the garden, for parks, parkways and roadsides. It is comparatively rapid in growth. Some crowded plantings in the Garden are so dense that they have suggested the suitability of this species for informal hedges. Light, yearly pruning would enable one to maintain a hedge of 10-20 ft. in height almost indefinitely.

Coast Live Oaks normally grow in situations where the ground becomes dry during the summer. Failure to remember this basic requirement, either in utilizing native stands, or in making new plantings, is likely to cause trouble or even the loss of trees. Lawns and other water-loving plants should not be used close to these trees, for the soil is almost certain to become waterlogged. Plants which have a summer dormancy are ideal for use in the immediate areas around these trees. Many bulbous plants, the California Maiden Hair Fern, the Coffee Fern, the Coastal Wood Fern, Currants, Gooseberries, Carpenteria and Snowberries are suggested. As a last resort, tile drains are sometimes laid around these oaks to carry off excess water, but this is expensive, and is not to be considered as an ideal solution such as restricting plantings to species of the sorts suggested above.

Persons whose gardens must be kept meticulously tidy should avoid using the Coast Live Oak, for, although it sheds its leaves mainly in March, it also drops some throughout the year. Periodically it is attacked by a beetle (*Agrilus politus*), the larvae of which girdle small branches causing patches of brown foliage over most of the tree. A mildew causes a "witches broom", especially near the coast, but it is not serious and it is doubtful if any control, other than pruning, is necessary.

CARL B. WOLF

RANCHO SANTA ANA BOTANIC GARDEN

Dedication of Garden Foundation to the Board of Trustees for the Rancho Santa Ana Botanic Garden of the Native Plants of California:

"THE NATURE, OBJECT AND PURPOSE OF THE INSTITUTION HEREBY FOUNDED AND TO BE MAINTAINED HEREUNDER.

ITS NATURE: A botanic garden of the native plants of California, herbarium and botanical library, containing living and/or preserved specimens of trees, plants and flowers native to California, and literature relating thereto.

ITS OBJECT: The preservation and improvement of the property now transferred and such property as may hereafter be transferred to the Trustees for those who not only wish to enjoy, but to study, assembled in one accessible locality, native California plants; and for the advancement of science and education with reference to plant life indigenous to the State of California.

ITS PURPOSES: (a) An institution founded primarily for scientific research in the field of local botany.

(b) To preserve the native California flora, try to replenish the depleted supply of some of the rarest plants which are rapidly being exterminated, and bring together in a comparatively small area as complete a collection of the rich store of native California plants as can be grown in this southern section of the state, thereby promoting the general welfare of the people of the state by providing the means for encouraging and carrying on the above mentioned activities in said state and by doing such other things as may be necessary and desirable to carry out the objects hereof."

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